

Proposed Drilling, Completions and Production Activity Courtesy Notice
Waste Connections Site 3A-29, 3B-29H, 3C-29H, 3D-29H, 3E-29H, 3F-29H, 3G-29H
Pratt Well Site 4B-29H, 4C-29H, 4D-29H, 4E-29H, 4F-29H, 4G-29H

February 11, 2014

Encana Oil & Gas (USA) Inc. anticipates drilling and completion operations of two multi-well horizontal pads located in the area will begin once we have received regulatory approval by the COGCC and the Town of Erie. The following is a summary of what you can expect during operations.

What can you expect?

Preparing the location: (approximately 4 to 6 weeks; includes use of heavy equipment)

Preparation of the location will last approximately four to six weeks. Initial activity will include the use of heavy equipment. During this phase, you can expect land clearing, grading, road construction and soils handling. Water trucks will be on location to control dust and there will be large trucks carrying earth moving equipment, graders, rollers, etc. Once this task is complete, the drilling rig will move onto the location.

Phase One: Drilling the Well (approximately 15 days per well, 24/7 hour operation)

We estimate that the rig, which stands approximately 150 feet high, will be actively drilling for approximately 90 days. Drilling times vary from well-to-well. Operations during the drilling phase are conducted 24/7. This around the clock activity maintains wellbore integrity and reduces the total amount of time we're on location. Access to the location is limited to authorized personnel at all times.

There is traffic, light and noise associated with drilling operations. Our operations comply with strict State of Colorado noise regulations. Sound walls will be constructed around the perimeter of each location. The rig is also equipped with mufflers that further reduce rig engine noise. We work hard to minimize light coming from location and to the extent that we can maintain a safe working environment, we direct lights away from neighbors and install light diffusing material on individual rig lights.

One of the first things we do when drilling a well is install surface casing. Using compressed air and a small amount of fresh water, we will drill and set surface casing. Per the Colorado Oil and Gas Conservation Commission (COGCC), surface casing extends to a depth of 200' deeper than the depth of any known aquifers. The surface casing, coupled with natural geologic barriers, isolates shallow groundwater from liquid bearing geologic formations thousands of feet below. The casing is then cemented back to surface and integrity tested in accordance with detailed and strict state regulations.

During the next phase of drilling, Encana will use a drilling mud that contains mineral or vegetable oil. Encana does not utilize diesel-based drilling mud in any of its operations. We continue drilling the well to a total vertical depth of approximately 6,500 feet, which is about 500 feet above the horizontal portion of the well; this is the kick-off point for the lateral portion of the well. The horizontal or lateral of the wellbore will extend to a horizontal distance of 2,500 to 5,000 feet.

Once we've reached the total planned distance for the lateral portion of the wellbore, we install production casing. Production casing provides another layer of protection. This layer is cemented into place and cement bond integrity tested to ensure a good protective layer. The production casing provides the pathway for production liquids to rise to the surface and isolate the wellbore, preventing migration of fluids and natural gas from the Niobrara oil-bearing zone into water sources. Finally, thousands of feet of dense rock formations separate the Niobrara formation from drinking water sources and aquifers.

Formation cuttings return up and out the wellbore during drilling and are later disposed of using state-approved disposal methods.



Phase Two: Completing the Wells (averages an additional 15 to 20 days)

Once the well is drilled the next phase is called the completion phase and typically begins 1-3 weeks after the drilling rig moves off of the location. The completions process enables the flow of liquids from the formation to the surface. To release the flow of liquids to the surface, each zone must be fracture stimulated or hydraulically fraced, often referred to as “fracking.”

During this phase, there is increased noise and significant truck traffic. This includes water holding tanks being moved onto location, completions crews and other trucks entering and exiting from location. This operation first utilizes a slightly smaller service rig (approximately 70'). The process of fracking lasts approximately 2-3 weeks.

What is fracking?

To begin the fracking process, a perforating tool is run in the horizontal wellbore and set adjacent to the zone of interest. The tool is activated using electrical signals and high energy jet charges are detonated which penetrate the steel casing and cement sheath surrounding the casing. These “jet charges,” about the size of the index finger, penetrate the very dense, hard rock formation only a few inches. Hydraulic fracturing is the process through which a fluid (typically a mix of water, sand and a small amount of fluid additives) is pumped down the wellbore under high pressure for short periods of time into geological formations that contain the liquids. The geologic formations that Encana will frack in the DJ Basin are generally located from 6,500 to 8,500 feet deep – more than one and a half miles below the surface.

Phase Three: Production & Reclamation (averages 10-15 days for production; reclamation times vary greatly)

After fracking, a crew runs tubing into the well to enhance production by creating a more efficient path for the liquids to travel to the surface. The flow of the liquids is controlled by a series of valves and instruments at the top of the well. This is the most visible part and allows for the surface monitoring and regulation of the production from a producing well. For this location, Encana plans to move the liquids and natural gas from location through pipelines to a central gathering facility known as the Hub. Once the wells are on production the amount of activity at the site decreases and the reclamation process can begin. Reclamation varies from location to location and may include removing debris, smoothing the operations area, and planting to restore a minimum of 70-75% percent of the location to its former condition. Reclamation can take as little as two weeks or as long as one year depending on location, season, weather, and materials (e.g., fencing) availability.

Safety & Impact Mitigation Efforts

Safety is our top priority. Our business requires conformance with rigorous Environmental, Health and Safety (EH&S) and ethical practices, ensures respect for stakeholders and requires compliance with all applicable laws and appropriate industry standards. We not only want to ensure our employees and contractors are operating in a safe environment, we also want to ensure the safety of those impacted by our activities. We provide ongoing training for staff in matters of EH&S and constantly look for ways to reduce our impacts to the community, decrease our emissions intensity and increase our energy efficiency. We require safety meetings at the beginning of each shift. All staff and contractors are required to adhere to strict safety rules and procedures to ensure the highest level of safety.

Additional Resources:

www.youtube.com/encana
www.cogcc.state.co.us
www.energyindepth.org
www.fracfocus.org
www.cdphe.state.co.us/ap/oilgas.html

